

CLAIMS

1. A clamp device for clamping an object to be clamped to a fixing base,
comprising:

a body detachably secured to the fixing base;

5 a pressing member for pressing to clamp the object;

a rotary member to be operated for rotation;

the body, the pressing member, and the rotary member being combined
so as to rotate relative to each other about an axis; the pressing member being
adapted to rotate between a first rotary position not facing the object in the same
10 direction as the axial direction and a second rotary position facing the object in
the same direction as the axial direction; and the rotary member being adapted
to rotate between one rotary position on the side of the first rotary position and
the other rotary position past a middle rotary position on the side of the second
rotary position;

15 the pressing member being adapted to move in the same direction as the
axial direction between a press releasing position on a press releasing side and a
pressing position on a pressing side so as to press the object and release the
press in the second rotary position;

a contact means for causing the pressing member and the rotary member
20 to contact with each other so that the pressing member rotates between the first
rotary position and the second rotary position as the rotary member rotates;

a holding means for holding the pressing member in the press releasing position between the first rotary position and the second rotary position;

a rotary range restricting means for preventing the pressing member from rotating from the second rotary position to a side opposite the first rotary position; and

an interlock means for moving the pressing member positioned in the second rotary position, between the press releasing position and the pressing position, as interlocked with the rotation of the rotary member between the middle rotary position and the other rotary position;

wherein, when the rotary member is rotated from the one rotary position to the middle rotary position, the pressing member, while being held in the press releasing position by the holding means, is rotated by the contact means from the first rotary position to the second rotary position as the rotary member rotates, and when the rotary member is rotated from the middle rotary position to the other rotary position, the pressing member, while being remained in the second rotary position by the rotary range restricting means, is moved from the press releasing position to the pressing position by the interlock means to press the object, and

wherein, when the rotary member is rotated from the other rotary position to the one rotary position side, the pressing member is moved by the interlock means from the pressing position to the press releasing position side,

and the pressing member is rotated by the contact means from the second rotary position to the first rotary position as the rotary member rotates.

2. The clamp device according to Claim 1, wherein

5 the body has an axial bore in the axial direction thereof;

the rotary member has a shank portion that is rotatably inserted in the axial bore so that the rotary member may rotate about the axis relative to the body; and

10 the pressing member has a through-hole for the shank portion to pass and is allowed to rotate about the axis relative to the rotary member.

3. The clamp device according to Claim 1, wherein

15 the rotary range restricting means comprises: a projection disposed in either one of the body and the pressing member; and a recess such as a hole or a cut out formed in the other of the body and the pressing member, to receive the projection and allow the projection to move, and

wherein, when the pressing member rotates from the first rotary position to the second rotary position, the projection relatively moves within the recess and comes into contact with the inside surface thereof, resulting in prevention of further movement of the projection.

4. The clamp device according to Claim 1, wherein
the holding means comprises a resilient body for urging the pressing
member toward the press releasing position from the pressing position.

5 5. The clamp device according to Claim 1, wherein
the interlock means comprises: a guide means for guiding the rotary
member to move in the same direction as the axial direction by rotating the
rotary member; and a support means for supporting the pressing member so that
it moves between the press releasing position and the pressing position as the
rotary member moves in the same direction as the axial direction.

10 6. The clamp device according to Claim 5, wherein
the guide means comprises: a guided projection disposed in either one of
the body and the rotary member; and a guide surface provided in the other of
the body and the rotary member, for relatively guiding the guided projection.

15 7. The clamp device according to Claim 5, wherein the support means
comprises: a resilient element for urging the pressing member toward the press
releasing position from the pressing position; and a receiving portion disposed
in the rotary member for receiving the pressing member against the urging force
of the resilient element.

8. The clamp device according to Claim 1, wherein

the contact means comprises a resilient member for urging so that the first sliding surface and the second sliding surface of the pressing member and the rotary member facing each other come into tight contact.

5 9. The clamp device according to Claim 8, wherein

the contact means comprises: in addition to the resilient member, an engagement recess provided in either one of the pressing member and the rotary member; and an engagement member that is provided in the other of the pressing member and the rotary member and has an engagement portion
10 resiliently urged to releasably engage the engagement recess.

10. The clamp device according to Claim 1, wherein

the pressing member is guided, while being in the press releasing position, to move from a side distant from the pressing position to a side near the pressing position as the pressing member rotates from the first rotary
15 position to the second rotary position.